



Docket No.: K-0214

*AF12683*  
*C-FW*  
PATENT

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF APPEALS AND INTERFERENCES**

In re Application of

Confirmation No.: 8209

Seung Woog CHOI

Group Art Unit: 2683

Serial No.: 09/655,402

Examiner: Stephen M. D Agosta

Filed: 9/5/2000

**Customer No.: 34610**

For: METHOD FOR CONTROLLING POWER OF BASE STATION

**TRANSMITTAL OF APPEAL BRIEF**

U.S. Patent and Trademark Office  
220 20th Street S.  
Customer Window, Mail Stop Appeal Brief-Patents  
Crystal Plaza Two, Lobby, Room 1B03  
Arlington, VA 22202

Sir:

Submitted herewith in triplicate is Appellant's Appeal Brief in support of the Notice of Appeal filed August 4, 2004. Enclosed is Check No. 12944 for the Appeal Brief fee of \$340.00.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 16-0607 and please credit any excess fees to such deposit account.

Respectfully submitted,  
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**Date: October 4, 2004**

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Sir:

This Appeal Brief is submitted in support of the Notice of Appeal filed August 4, 2004.

**REAL PARTY IN INTEREST**

The party in interest is the assignee, LG Information & Communications, Ltd. The assignment document is recorded at Reel 011087 and Frame 0447.

**RELATED APPEALS AND INTERFERENCES**

There are no related appeals and interferences.

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**STATUS OF THE CLAIMS**

This is an appeal from the final rejection dated February 9, 2004 of claims 1-20. Claim 2 has been canceled without prejudice or disclaimer. No other claims are pending.

**STATUS OF AMENDMENTS**

All Amendments filed in this application have been entered except a Supplemental Amendment After Final Rejection that cancels claims 3-4. A correct copy of appealed claims 1 and 5-20, including all amendments thereto, appears in the attached Appendix.

**SUMMARY OF THE INVENTION**

Reverse link coverage denotes a maximum distance at which a signal from a mobile station can reach a base station. The reverse link can vary with maximum transmission power of the mobile stations as well as environmental interference. [page 8, lines 11-22]

In contrast, forward link coverage is dependent upon the power level transmitted from a base station. A related art mobile communication system controls parameters of base stations so that forward link coverage equals the reverse link coverage in formation of the cells. [page 9, lines 1-5]

Embodiments of the invention can set the level of a picocell reverse link greater than the forward link, which can be set relatively equal to the picocell size. [page 9, lines 8-13] Assuming base station A provides service to a macrocell and base station B provides service

to a picocell, in a soft handoff of one mobile station (MS) to base station B from base station A (or from base station B to base station A), embodiments of the invention can set base station B to maintain or increase the transmission power of the MS. [Figure 6, page 9, lines 14-23; Figure 7 and page 11, lines 10-15] The base station B preferably does not perform power control or can increase the power level of the MS in the handoff region between the macrocell and picocell, during transmission of the extended handoff direction message or the transmission of the handoff complete message. [page 10, lines 19-23 and page 12, lines 1-13]

Thus, embodiments can allow the MS in the handoff region between the picocell and macrocell to transmit signals equal to a level of transmission power when connected to a base station serving the macrocell. Further, a reverse link coverage greater than the forward link coverage of the MS can be established. Thus, embodiments of the invention can allow a smooth soft handoff. [page 12, lines 13-15 and 22-23]

## ISSUES

1. Whether the Patent Office erred in rejecting pending claims 1 and 5-6 under 35 U.S.C. §103(a) over Bojerd (U.S. Patent No. 5,946,622) in view of Baum et al. (U.S. Patent No. 6,510,319) and Weaver Jr., et al. (U.S. Patent No. 5,917,811) and Tiedemann Jr., et al. (U.S. Patent No. 5,999,816).

2. Whether the Patent Office erred in rejecting pending claims 7-13 and 15-20 under 35 U.S.C. §103(a) over Bojerd (U.S. Patent No. 5,946,622) in view of Baum et al. (U.S. Patent

No. 6,510,319) and Weaver Jr., et al. (U.S. Patent No. 5,917,811) and Tiedemann Jr., et al. (U.S. Patent No. 5,999,816).

3. Whether the Patent Office erred in rejecting pending claim 14 under 35 U.S.C. §103(a) over Bojerd (U.S. Patent No. 5,946,622) in view of Baum et al. (U.S. Patent No. 6,510,319) and Weaver Jr., et al. (U.S. Patent No. 5,917,811) and Tiedemann Jr., et al. (U.S. Patent No. 5,999,816).

### **GROUPING OF THE CLAIMS**

Appealed claims 1 and 5-6 form a single group and stand or fall together. Appealed claims 7-13 and 15-20 form a single group and stand or fall together. Appealed claim 14 forms a single group. Claims 1, 11 and 20 are the only independent claims.

### **THE ARGUMENT**

#### **35 U.S.C. §103 Rejection**

##### **Issue 1:**

A *prima facie* case of obviousness was not established in the rejection of claims 1 and 5-6 under 35 U.S.C. §103(a) as allegedly being unpatentable over Bojerd, Baum, et al. Weaver Jr., et al. and Tiedemann Jr., et al.

Bojerd

The Office Action alleges that Bojerd teaches a macrocell and picocell and the ability to hand off between the two systems. The Office Action acknowledges that Bojerd does not teach "performing a power control such that a transmission power level of said mobile station is not lowered, if said mobile station is determined to be within said soft handoff region and if a soft handoff of said mobile station is required."

Baum et al. (hereafter "Baum")

1a) Regarding claim 1, the Office Action states that the Abstract in Baum "is interpreted by the examiner to read on power transmission is not lowered." Applicant respectfully disagrees with this characterization. As discussed in Applicant's prior response, Baum explicitly teaches to lower the gain of the base station. This is expressly taught in column 2, lines 21-29 of Baum, which follows (with emphasis added).

More particularly, when an overload status is attained by a base station, it informs the SDU of the actual value of the power gain level applied and its power overload status. Once the overload status is detected, no further gain increases by the SDU are allowed until the power overload condition is retracted. **Gain decreases, however, are allowed.** That is, the subsequent gain values can be less than or equal to the value returned with the most recent response indicating overload.

As expressly stated in the above-referenced section, Baum teaches to decrease the gain of the forward link. Applicant fails to understand how the abstract can be interpreted by the Office Action "to read on power transmission is not lowered" (page 2 of Office Action dated October 29, 2003). Applicant respectfully submits that the Office Action's interpretation of Baum is in

direct contradiction to Baum's express teachings. Therefore, the Baum reference as applied cannot teach the features alleged by the Office Action.

1b) Further, regarding claim 1, the February 9, 2004 Office Action asserts that Baum discloses providing gain control that determines a gain which is acceptable to all base stations involved in the handover. The Office Action again cites the Abstract in Baum and further asserts this disclosure would involve raising the power, lowering the power or keeping the power the same. See page 2, Item 2 of the February 9, 2004 Office Action.

In contrast, Applicant's claim 1 recites performing a power control such that a transmission power level of said mobile station is not lowered, if said mobile station is determined to be within said handoff region and if a soft handoff of said mobile station is required and combinations thereof. Thus, Applicant's claim 1 recites features of power control when a soft handoff of said mobile station is required in a soft handoff region.

Under such handoff conditions, Baum discloses an intersecting region 142 and a mobile terminal 260 simultaneously served by base stations (BS) 106 and 108 during a soft handoff. See Figure 1 and column 4, lines 34-37 of Baum. Baum further discloses "soft handoff occurs when the power level of the signal between the mobile terminal and another base station (e.g., BS 108) is increased above a predetermined threshold." See column 3, lines 38-41 of Baum. During soft handoff when an overload conditions applies, Baum discloses BS 108 suggests applying a forward link gain at level "X2," which is less than the BS 106 level "X1," and then a power control system 206 reduces the forward link gain setting to level "X2" for all base stations (e.g.,

base station 106 and 108). See Fig. 2B and column 5, lines 4-15 of Baum. Under conditions that no overload exists, Fig. 2A appears to disclose no adjustment to the power levels that trigger the soft handover. Accordingly Applicant respectfully submits that Baum specifically teaches away from at least features of a transmission power level of said mobile station is not lowered, and combinations thereof recited in claim 1.

1c) Further, the Office Action now acknowledges that Baum does not disclose reverse link power control. However, the Office Action does not suggest why one of ordinary skill in the art would look to the alleged teachings of controlling interference between base stations to obtain teachings as to how to control the power level from mobile terminals to a base station. The Office Action asserts in page 2, Item 3 of the February 9, 2004 Office Action that forward and reverse power controls are well known in the art and one skilled would use both concurrently. Applicant agrees with this general statement.

However, Applicant wishes to clarify that the concerns, tradeoffs, prior art and standard procedures of forward link power control can be different, separate issues than the same for reverse link power control. See for example, page 8, lines 16 - page 9, line 3 of the present specification. Thus, Applicant respectfully submits that even if Baum disclosed power control features for a forward link, such features do not teach or suggest any features or similar features regarding a reverse link power control. Further, as noted above the Office Action's "teachings" regarding the base station power control are in direct contradiction to Baum itself with regard to forward link power control during soft handoff under overload conditions.

1d) In summary, Applicant respectfully submits Baum teaches in overload conditions to decrease the gain of the forward link in a soft handoff, which teaches away from at least recited features of a transmission power level of said mobile station is not lowered, if said mobile station is determined to be within said soft handoff region and if a soft handoff of said mobile station is required and combinations thereof as recited in claim 1. Applicant respectfully submits that features wherein the transmission power level of said mobile station is not lowered during a transmission of an extended handoff direction message and a handoff complete message recited in claim 1 require that a power level not be lowered during same. Again, Applicant respectfully notes cited portions of Baum address a forward link and claim 1 recites features of a reverse link.

Weaver Jr. et al. (hereafter "Weaver")

The Office Action asserts Weaver provides a system that controls forward/reverse link coverage areas, which depend on power control. Applicant respectfully submits that Weaver uses different, independent procedures to control the forward and reverse link power. In addition, Applicant respectfully notes Weaver is directed to a method and apparatus for measurement directed hard handoff in a CDMA system. Applicant respectfully submits that Weaver is silent with respect to power control methods during a soft handover.

Tiedemann Jr. et al. (hereafter Tiedemann)

With respect to Tiedemann, Applicant respectfully submits that Office Action again ignores the express teaching of this reference, which discloses in column 17, lines 51-60 the following (with emphasis added).

Regarding the reverse link power control, the transmission power of the mobile station is controlled in a closed loop fashion by comparing the received energy of a group of symbols in the reverse link frame to a threshold value. If the received energy of a group of symbols is less than the threshold value, the mobile station is instructed to increase its transmission power. **If received energy of a group of symbols is above the threshold value, the mobile station is instructed to decrease its transmission power.**

As expressly stated in the above-referenced section, Tiedemann teaches a conventional closed loop control which allows for the control power to be lowered, which is in direct contradiction to the functionality the Office Action alleges Tiedemann supports.

§103 Rejection

a) As stated in MPEP § 2143.01, to establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 165 USPQ 494, 496 (CCPA 1970). Neither Bojerd, Baum, Weaver, and Tiedemann individually, nor the combination of these references discloses at least features of performing a power control such that a transmission power level of said mobile station is not lowered, if a soft handoff of said

mobile station is required and combinations thereof as recited claim 1. Therefore, these references do not render Applicant's claimed combinations obvious as alleged by the Office Action.

Additionally, as stated in MPEP § 2141.02, a prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984). As confirmed in MPEP § 2145, it is improper to combine references where the references teach away from their combination. *In re Grasselli*, 713 F.2d 731, 218 USPQ 769, 779 (Fed. Cir. 1983). Clearly, in applying the Bojerd, Baum, Weaver and Tiedemann references, the Office Action completely disregards the teachings of these references that expressly teach away from the claimed features. Accordingly, these references do not render Applicant's claimed combinations obvious as alleged by the Office Action.

b) Further, Applicant respectfully submits that one of ordinary skill in the art would not have been motivated to modify the systems of Bojerd, Baum, and Weaver to arrive at Applicant's claimed combinations absent impermissible hindsight reference to Applicant's specification. Applicant notes that Bojerd, Baum, Weaver and Tiedemann are in generally the same field of endeavor (RF cellular communications). However, Applicant again notes that power control goals and procedures of forward link are generally independent of reverse link. Further, Applicant respectfully submits that hard handoff procedures can be independent of soft handoff procedures. Applicant further respectfully notes that the Office Action has not

addressed reasons why procedures directed towards a hard handover (e.g., Weaver and Tiedemann) should be applied to the features recited in claims 1 and 5-6 or why such features should be applied to a method and apparatus direct towards soft handover such as described in Baum.

Finally, although the references in general are in the same field of endeavor, the specific features and the specific motivation to combine them that is asserted to result in features recited in claims 1 and 5-6 are believed to have been arrived at using impermissible hindsight reference. For example, Applicant respectfully submits that the applied references, individually or in combination, do not teach or suggest at least features of performing a power control such that a transmission power level of said mobile station is not lowered, if a soft handoff of said mobile station is required and combinations thereof as recited claim 1.

Applicant respectfully submits the Office Action merely compiles a list of "alleged teachings" and frames them with in the context of Applicant's disclosure. Applicant respectfully submits that there is no teaching or suggestion in the references that support this amalgamation of these "alleged teachings," which are further contradicted by the references themselves. Thus, specific conditions and timing of the recited features of power control have been arrived at using impermissible hindsight reference to Applicant's specification.

**Issue 2:**

A *prima facie* case of obviousness was not established in the rejection of claims 7-13 and 15-20 under 35 U.S.C. §103(a) as allegedly being unpatentable over Bojerd, Baum et al., Weaver Jr., et al. and Tiedemann Jr., et al.

**Bojerd**

With respect to claim 11, The Office Action acknowledges that Bojerd does not teach “setting a reverse link coverage of said picocell greater than a forward link coverage of said picocell, if said mobile station is determined to be within said soft handoff region and if a soft handoff of said mobile station is required.”

**Baum**

Further, regarding claim 11, the February 9, 2004 Office Action asserts that Baum discloses providing gain control that determines a gain which is acceptable to all base stations involved in the handover. The Office Action again cites the Abstract in Baum and further asserts this disclosure would involve raising the power, lowering the power or keeping the power the same. See page 2, Item 2 of the February 9, 2004 Office Action. Applicant respectfully submits that such a general modification taught by Baum as asserted by the Office Action does not teach or suggest specific features including setting a reverse link coverage of said picocell greater than a forward link coverage of said picocell and combinations thereof as recited in claim 11. Further, the Office Action now acknowledges that Baum does not disclose reverse link power control.

Weaver

2a) With respect to claim 11, the Office Action relies on Weaver to cure the additional deficiencies of Bojerd and Baum, which fail to teach or suggest "setting a reverse link coverage of said picocell greater than a forward link coverage of said picocell..." (page 5, lines 17-20 of Office Action dated February 9, 2004). However, Weaver teaches in column 21, line 60 to column 22, line 29, as noted by the Office Action, "a base station which balances a forward a link coverage area to reverse link coverage area" (page 2, Item 3, Office Action dated February 9, 2004). Once again, Applicant respectfully submits that the Office Action has ignored the express teaching of Weaver to "interpret" a contradictory teaching. In this case, in direct contradiction to the admitted teaching of Weaver, the Office action alleges that Weaver teaches a reverse link coverage area greater than a forward link coverage area.

Namely, Applicant respectfully submits that should Weaver determine that the reverse link coverage is less than the forward link coverage, Weaver takes action to compensate until the reverse link coverage is equal to the forward link coverage. Similarly, Applicant respectfully submits that should Weaver determine that the reverse link coverage is greater than the forward link coverage, Weaver takes action to compensate until the reverse link coverage is equal to the forward link coverage. See column 21, line 60-column 22, line 54 of Weaver. Thus, Applicant respectfully submits that Weaver teaches away from features of a soft handoff where a reverse link coverage of said picocell is set greater than a forward link coverage of said picocell as disclosed in embodiments of the present invention.

2b) Further, the Office Action asserts Weaver provides a system that controls forward/reverse link coverage areas, which depend on power control. Applicant respectfully submits that Weaver uses different, independent procedures to control the forward and reverse link power. In addition, Applicant respectfully notes Weaver is directed to a method and apparatus for measurement directed hard handoff in a CDMA system. Applicant respectfully submits that Weaver is silent with respect to power control methods during a soft handover.

2c) Finally, Applicant respectfully submits Weaver teaches away from features recited in claim 11 because Weaver teaches that during general operations when the system becomes loaded, the reverse link handoff boundary effectively moves closer in towards the base station, which is known as base station breathing. See column 22, lines 24-52 of Weaver. Thus, Weaver discloses the reverse link power decreases and can be less than the forward link power but that the forward link can be compensated. See also column 22, lines 29-37 of Weaver. In contrast, claim 11 recites setting a reverse link coverage of said picocell greater than a forward link coverage of said picocell if said mobile station is determined to be within said soft handoff region and if the soft handoff of said mobile station is required, and performing a power control such that a transmission power level of said mobile station is not lowered during a transmission of an extended handoff direction message and a handoff complete message and combinations thereof.

2d) In addition, Applicant respectfully submits that even if Weaver discloses the reverse link power transmission can be modified to correlate forward and reverse link handoff

boundaries, Weaver does not teach or suggest forward link transmission controls gain controls should be applied to a reverse link transmissions or modifications to forward link transmission controls to adapt the same for the reverse link.

Tiedemann

With respect to claim 11, Applicant respectfully submits that Tiedemann does not teach or suggest the features lacking from Weaver, or Bojerd and Baum.

§103 Rejection

Thus, Applicant respectfully submits that the applied references, individually or in combination, do not teach or suggest at least features of setting a reverse link coverage of said picocell greater than a forward link coverage of said picocell, if a soft handoff of said mobile station is required and combinations thereof as recited in claim 11.

Further, although the references in general are in the same field of endeavor, the specific features and the specific motivation to combine them that is asserted to result in features recited in claims 7-13 and 15-20 are believed to have been arrived at using impermissible hindsight reference. The Federal Circuit has held that there must be a clear and particular suggestion in the prior art to combine the teachings of the cited references in the manner proposed by the Examiner. As explained by the Federal Circuit, "[o]ur case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references." *See In re Dembiczak* 175 F.3d 994, 999, 50 U.S.P.Q.2d 1614, 1617

(Fed. Cir. 1999). Applicant respectfully submits that the Office Action has not provided specific support or rationale from the applied references for the required modifications that are asserted to render oblivious at least features of setting a reverse link coverage of said picocell greater than a forward link coverage of said picocell, if a soft handoff of said mobile station is required and combinations thereof as recited in claim 11

**Issue 3:**

A *prima facie* case of obviousness was not established in the rejection of claim 14 under 35 U.S.C. §103(a) as allegedly being unpatentable over Bojerd, Baum et al., Weaver Jr., et al. and Tiedemann Jr., et al.

Applicant acknowledges the Office Action's indication that a more favorable outcome may occur if claims 12-14 were added to claim 11. See page 2, Item 1 of the February 9, 2004 Office Action. However, Applicant respectfully submits that claim 14 depends from claims 11, 12 and 13 respectively and incorporates features recited therein. Thus, Applicant respectfully requests the Patent Office indicate claim 14 contains allowable subject matter. See Item 1, page 2 of the February 9, 2004 Office Action. See also the June 30, 2004 Advisory Action.

**CONCLUSION**

In accordance with the arguments set forth above, the Appellants respectfully request the honorable Board of Appeals and Interferences overturn the rejections of claim 1 and 5-20, and erroneously made by the Examiner under §103(a).

Respectfully submitted,  
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**Date: October 4, 2004**



## APPENDIX

1. A power control method in a multilayered communication system comprising:  
determining if a mobile station is within a soft handoff region between a macrocell region and a picocell region; and  
performing a power control such that a transmission power level of said mobile station is not lowered, if said mobile station is determined to be within said soft handoff region and if a soft handoff of said mobile station is required, wherein the transmission power level of said mobile station is not lowered during a transmission of an extended handoff direction message and a handoff complete message.
  
- 2-4. Canceled
  
5. The method of claim 1, wherein a base station which provides service to said picocell performs a power control to maintain the transmission power level of said mobile station.
  
6. The method of claim 1, wherein a base station which provides service to said picocell performs a power control to increase the transmission power level of said mobile station.
  
7. The method of claim 1, further comprising:  
setting a reverse link coverage of said picocell greater than a forward link coverage of said picocell.
  
8. The method of claim 7, further comprising:

controlling a level of transmission power of a base station which provides service to said picocell to set said forward link coverage relatively equal to a size of said picocell.

9. The method of claim 8, wherein setting said reverse link coverage greater than said forward link coverage comprises not attenuating signal waves when received by a base station which provides service to said picocell.

10. The method of claim 7, wherein setting said reverse link coverage greater than said forward link coverage comprises not attenuating signal waves when received by a base station which provides service to said picocell.

11. A power control method of a base station in a multilayered communication system comprising:

determining if a mobile station is within a soft handoff region between a macrocell region and a picocell region;

setting a reverse link coverage of said picocell greater than a forward link coverage of said picocell, if said mobile station is determined to be within said soft handoff region and if a soft handoff of said mobile station is required; and

performing a power control such that a transmission power level of said mobile station is not lowered during a transmission of an extended handoff direction message and a handoff complete message, if said mobile station is determined to be within said soft handoff region and if a soft handoff of said mobile station is required.

12. The method of claim 11, wherein a base station which provides service to said picocell performs a power control to maintain the transmission power level of said mobile station.

13. The method of claim 12, further comprising:  
controlling a level of transmission power of a base station which provides service to said picocell to set said forward link coverage relatively equal to a size of said picocell.
14. The method of claim 12, further comprising:  
setting said reverse link coverage greater than said forward link coverage by not attenuating signal waves when received by a base station which provides service to said picocell.
15. The method of claim 11, wherein a base station which provides service to said picocell performs a power control to increase the transmission power level of said mobile station.
16. The method of claim 15, further comprising:  
controlling a level of transmission power of a base station which provides service to said picocell to set said forward link coverage relatively equal to a size of said picocell.
17. The method of claim 15, further comprising:  
setting said reverse link coverage greater than said forward link coverage by not attenuating signal waves when received by a base station which provides service to said picocell.
18. The method of claim 11, further comprising:  
controlling a level of transmission power of a base station which provides service to said picocell to set said forward link coverage relatively equal to a size of said picocell.
19. The method of claim 11, further comprising:  
setting said reverse link coverage greater than said forward link coverage by not attenuating signal waves when received by a base station which provides service to said picocell.

20. A power control method of a base station in a multilayered communication system comprising:

    determining if a mobile station is within a soft handoff region between a macrocell region and a picocell region;

    setting a reverse link coverage of said picocell greater than a forward link coverage of said picocell, if said mobile station is determined to be within said soft handoff region and if a soft handoff of said mobile station is required, wherein controlling a level of transmission power of a base station which provides service to said picocell to set said forward link coverage relatively equal to a size of said picocell and setting said reverse link coverage greater than said forward link coverage by not attenuating signal waves when received by said base station; and

    performing a power control at said base station, if said mobile station is determined to be within said soft handoff region and if a soft handoff of said mobile station is required, wherein said base station either maintains the transmission power level of said mobile station or increases the transmission power level of said mobile station.